

What is claimed is:

1. An electronic device for generating a signal, the electronic device comprising:  
a plurality of transmitter resources for generating transmission signals;  
an output bus coupled to the plurality of transmitter resources, the output bus  
5 selectively receiving transmission signals from the plurality of transmitter resources; and  
an antenna summer coupled to the output bus, the antenna summer storing  
transmission signals received on the output bus.

2. The electronic device recited in Claim 1 wherein the antenna summer is a multi-  
10 port device allowing simultaneous read and write operations therein.

3. The electronic device recited in Claim 1 wherein the antenna summer includes a  
plurality of memory buffers that form a ping-pong buffer system.

4. The electronic device recited in Claim 1 further comprising:  
a plurality of memory buffers coupled to the output bus, each of the plurality of  
memory buffers designated to store the transmission signals designated for a respective one  
of antennae.

5. The electronic device recited in Claim 1 further comprising:  
an input bus coupled to the plurality of transmitter resources, the input bus for  
receiving data signals to be processed by the plurality of transmitter resources.

6. The electronic device recited in Claim 5 wherein the input bus communicates  
25 information to the plurality of transmitter resources in a serial manner.

7. The electronic device recited in Claim 1 further comprising:  
a processor coupled to the plurality of transmitter resources; and  
a computer readable memory coupled to the processor, the computer readable memory  
30 containing instructions and data that, when executed on the processor, implement a method  
for scheduling the plurality of transmitter resources.

8. The electronic device recited in Claim 7 wherein the method for scheduling the  
plurality of transmitter resources comprises the steps of:

a) providing an enabling signal from the computer readable memory to only a transmitter resource slated for a given antenna; and

b) transmitting operating information to operate only the transmitter resource slated for the given antenna.

5

9. The method recited in Claim 8 wherein the method further comprises the step of:

c) transferring control from a first list in memory for scheduling antennae to a second list in memory for scheduling transmitter resources only destined for a given antenna.

10

10. The electronic device recited in Claim 9 wherein the method for scheduling the plurality of transmitter resources further comprises the steps of:

d) returning control from the second list for scheduling transmitter resources to the first list for scheduling antenna when the second list is exhausted.

11. The electronic device recited in Claim 8 wherein the method for scheduling the plurality of transmitter resources comprises the step of:

e) communicating operating information from the computer readable memory only to the transmitter resources that will transmit signals to the given antenna.

12. The electronic device recited in Claim 8 wherein the operating information stored in the computer readable memory includes context information such as parameter information, timing information, state information, or configuration information.

13. The electronic device recited in Claim 8 wherein the method for scheduling the plurality of transmitter resources comprises the step of:

f) communicating to a given transmission resource an address of a source having data to be processed by the given transmission resource.

14. The electronic device recited in Claim 8 wherein the method for scheduling the plurality of transmitter resources comprises the step of:

g) disabling the control information stored in the second list for a given antenna for a channel that will stop transmitting from the given antenna.

15. The electronic device recited in Claim 8 wherein the method for scheduling the plurality of transmitter resources comprises the step of:

c) sequencing operating information for a given channel sooner in the second list for channels having a high priority.

5

16. The electronic device recited in Claim 9 wherein the method for scheduling the plurality of transmitter resources further comprises the step of:

d) executing the transmitter resources multiple times for different transmission signals within a system cycle.

10

17. The electronic device recited in Claim 1 wherein the plurality of transmitter resources that service an antenna array is less than the number of antenna in the antenna array.

18. The electronic device recited in Claim 1 wherein the plurality of transmitter resources is limited to the worst-case load of number of transmitter resources needed for any single antenna within a group of antennae.

19. The electronic device recited in Claim 1 wherein the electronic device further comprises:

at least one configurable transmitter resource that is parameterizeable by the control information to satisfy a transmission protocol for any one of a plurality of channel formats.

20. A configurable transmitter resource for generating any one of a plurality of channel formats, the configurable transmitter comprising:

a computer readable memory containing information for the plurality of channel formats to which the configurable transmitter resource can be configured;

a processor coupled to the computer readable memory, the computer readable memory containing instructions and data that, when executed on the processor, implement a method for operating the configurable transmitter resource; and

a configurable modulator coupled to the processor, the configurable modulator including a selective interconnect for selectively providing one of a plurality of data samples for modulating a data signal.

21. The configurable transmitter resource recited in Claim 20 wherein the modulator is configurable to modulate data for a plurality of modulation schemes

22. The configurable transmitter resource recited in Claim 20 wherein the plurality of  
5 channel format information stored in the slot format table includes any combination of puncturing information, slot size, spreading factor, or identification of a source of data.

23. The configurable transmitter resource recited in Claim 20 further comprising:  
at least one parameterizeable interface coupled to the local computer readable  
10 memory, the parameterizeable interface configurable to any one of the plurality of transmission signal types designated by control information.

24. A configurable modulator for processing a data signal, the configurable modulator resource comprising:

a memory having a plurality of shift register taps coupled sequentially, the memory storing a stream of data values;

a selective interconnect coupled to a portion of the plurality of shift register taps that represent a given modulation scheme; and

an input line coupled to a multiplexer, the input line for receiving an instruction that indicates which of the plurality of shift register taps is utilized for a desired modulation  
20 protocol.

25. The configurable modulator recited in Claim 24 wherein the memory has a first in first out protocol.

26. The configurable modulator recited in Claim 24 wherein the memory size is sufficient to store a minimum of two symbols worth of data values for diversity encoding.

27. The configurable modulator recited in Claim 24 wherein the memory size is  
30 sufficient to store a minimum of two symbols worth of data values for the most intensive modulation scheme slated for the configurable modulator.

28. The configurable modulator recited in Claim 24 wherein the modulation schemes implemented by the configurable modulator include any combination of one or more of

binary phase shift keying (BPSK), quadrature phase shift keying (QPSK), or 8, 16 or 64 quadrature amplitude modulation (QAM) schemes, or space time transmit diversity (STTD).

29. In an electronic device having a processor, a computer readable memory, and at least one transmitter resource coupled to the processor and computer readable memory, a method of scheduling the transmitter resources for a desired channel, the method comprising the steps of:

a) providing an enabling signal from the computer readable memory to only the transmitter resource driving a given antenna; and

b) transmitting operating information to operate only the transmitter resource driving a given antenna.

30. The electronic device recited in Claim 29 wherein the method for scheduling the transmitter resources further comprises the step of:

c) transferring control from a first list in memory for scheduling antennae to a second list in memory for scheduling transmitter resources only destined for a given antenna.

31. The electronic device recited in Claim 30 wherein the method for scheduling the transmitter resources further comprises the step of:

d) returning control from the second list for scheduling transmitter resources to the first list for scheduling antenna when the second list is exhausted.

32. The electronic device recited in Claim 30 wherein the method for scheduling the transmitter resources further comprises the step of:

e) repeating steps a) through d) in a serial manner for a plurality of antennae.

33. The electronic device recited in Claim 29 wherein the method for scheduling the transmitter resources further comprises the step of:

c) disabling the operating information stored in the memory for a channel that desires to stop transmitting from a given antenna.

34. The electronic device recited in Claim 29 wherein the method for scheduling the transmitter resources further comprises the step of:

c) resequencing the control information stored in memory for a channel from a location slating the channel to a first antenna to a location slating the channel to a second antenna.

5           35. The electronic device recited in Claim 29 wherein the method for scheduling the transmitter resources comprises the step of:

c) sequencing the control information in memory for a given antenna according to a user-determined priority associated with each channel.

10           36. The electronic device recited in Claim 29 wherein the method for scheduling the transmitter resources further comprises the step of:

c) executing the transmitter resources multiple times for different transmission signals within a system cycle.

5           37. The electronic device recited in Claim 29 wherein the plurality of transmitter resources that service an antenna array is less than the number of antenna in the antenna array.

10           38. An electronic device for generating a signal, the electronic device comprising:  
a plurality of transmitter resources for generating transmission signals;  
an antenna summer coupled to the plurality of transmitter resources, the antenna summer storing transmission signals; and

a means for communicating transmission signals from the plurality of transmission resources to the antenna summer for a given antenna in a serial manner.